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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,224	12/20/2001	Takashi Katsumata	11-076	4216
23400	7590	11/17/2005	EXAMINER	
POSZ LAW GROUP, PLC 12040 SOUTH LAKES DRIVE SUITE 101 RESTON, VA 20191			HANLEY, JOHN C	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No.		Applicant(s)	
	10/022,224		KATSUMATA ET AL.	
	Examiner		Art Unit	
	John C. Hanley		2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☒ Claim(s) 3,4,10,11,13-19,24,26-29,34-37,41 and 43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawing objection made in the prior Office action has been overcome by applicant's amendment to the claims.

Claim Objections

2. Claims 41, 3, 4, 10, 11, 14, 26, 43, 15, 27, 13, 16, 28, 17-19, 29, 24, 34 and 35-37 are objected to because of the following informalities:

Regarding claim 1, the noise reducer should reduce the noise *in* the vibration signal rather than the noise *of* the vibration signal;

There is no antecedent basis for subtractor in claim 41;

There is no antecedent basis for drive wire or output wire in claim 10;

There is no antecedent basis for drive wire or monitor wire in claim 11;

There is no antecedent basis pad, fixed portion, output wire or shield wire in claim 14;

There is no antecedent basis capacitive variation in claim 26;

There is no antecedent basis for external circuit or subtractor in claim 43;

There is no antecedent basis for pad, fixed portion, input electrode output electrode, input wire, output wire or shield wire in claim 15;

There is no antecedent basis for output electrode or predetermined direction in claim 27;

In claim 13, "on a plane" should be changed to "in a plane" for consistency with other claim terminology;

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There is no antecedent basis external circuit substrate in claim 17;

There is no antecedent basis for driving beams or detection beams in claim 24;

There is no antecedent basis for diction electrode or drive electrode in claim 34;

There is no antecedent basis for first predetermined direction in claim 35;

There is no antecedent basis for detection electrode and drive electrode in claim 37.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 17-19, 29, 32-34, 35-37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

5. Regarding claim 17, insulation is not disclosed on pad 70 on the fixed portion. Further, no motion is disclosed in the direction towards the external circuit substrate (K1?).

6. Regarding claim 32, the periodic signal is not disclosed as being input to the movable portion, the pad is not disclosed as having electrical insulation.

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7. Regarding claim 35 and 36, the disclosure does not support the output electrode and the monitor electrode measuring capacitive variation based on the same or single direction.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 13, 16, 28, 17-19, 29, 32-34 and 38-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Regarding claim 13, it is unclear how the supporting substrate differs from or further modifies the fixed portion and/or the frame.

11. Regarding claim 17, it is unclear what "toward said external circuit substrate" means, or what direction it is, or how it relates to the unspecified predetermined direction.

12. Regarding claims 17, 32 and 35, it is unclear where the insulation is on the pad, how the insulation shields said output wire, and how the constant potential is applied to the frame if the pad is insulated. Further regarding claim 32, it is unclear how the frame differs from or modifies the other recited elements, and where the electrical insulation on the frame is, and what does it insulate.

13. Further regarding claim 35, it is unclear how the frame is structural different, or structurally modifies, other recited elements such as the fixed portion.

14. Regarding claim 38, it is unclear if it is the shield wire pad or the detection electrode "which is adjacent to said drive electrode".

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 17-19, 29, 20-22, 30, 23-25, 31, 32-34 and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (US 5,969,225) in view of Itoh (US 6,119,518).

17. Kobayashi, Figure 8, shows a semiconductor device for sensing angular frequency having a fixed substrate formed of, for example, a high resistance silicon material (insulation), the substrate being formed in a rectangular shape. Also included is a movable portion supported for movement in an x direction by application of a capacitance driving means (input means), and a detection means for detecting capacitive variation (output means) in a y direction caused by driving the movable portion by the input means. The input and output electrodes associated with the input and output means, respectively, are arranged on different sides of the rectangular shape. The bar shaped beams 4 and 5 of Kobayashi collectively serve as both driving beams and detection beams, and these beams can also be U-shaped as shown by beams 25 in Figure 1 of Kobayashi. In column 4, lines 11+, Kobayashi specifically recognizes the problem of parasitic capacitance causing leakage of drive signals into the detecting means, and specifically motivates one to reduce the leakage. Other than

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the lack of specific teachings of electrode leads and a circuit substrate inherently required and obvious to complete the device for its intended use, Kobayashi lacks a specific teaching of shielding means to reduce cross talk. Electrostatic shielding is a well-known engineering solution to the problem of capacitive coupling. However, Itoh specifically teaches to use grounded shields (i.e., constant potential) for electrostatically isolating the driving terminals and the detecting terminals of an angular velocity sensor. It would have been obvious to one skilled in the art at the time of applicant's invention to reduce capacitive coupling between the input and output of Kobayashi by the use of grounded electrostatic shields as taught in Itoh, since Kobayashi recognizes the need to reduce the problem in such a sensor layout, and Itoh also recognizes the same problem and offers an alternative solution. The physical placement of the shield near any one of the electrodes to be shielded would have been obvious to anyone skilled in the art of shielding, so long as the shield is placed between the circuits to be shielded from one another. The "predetermined" distances and spacings recited in new claims 14 and 16 would be inherently obvious in the placement of a shield between two elements to shield them from one another. A conductive pad on the substrate is an obviously convenient method of either providing a conductor between the elements to be shielded, and/or to secure a shield wire in such a position. An electrostatic shield, by definition, must be physically positioned between circuits to be shielded from one another. Itoh's shield lines are between the circuits to be shielded from one another. Further, Itoh, at the bottom of column 1, discusses use of an earth plate in the prior art

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for isolating the driving terminals. The plate is arranged between the wiring lines of the individual terminals.

18. Claims 1, 2, 41, 3, 4, 6, 42, 9-11, 14, 26, 7, 8, 43, 15, 27, 44, 13, 16, 28 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi in view of Itoh as applied to claims 1-4, 6 and 13, above, and further in view of Ward (US 6,445,195). The combination of Kobayashi in view of Itoh lacks a teaching of monitor and dummy electrodes. Ward teaches the use of pick-off electrodes (monitor electrodes) to feedback positional information of the movable portion to correct and control the drive means. Ward further recognizes the problem of signal coupling between the drive electrodes and both the monitor and detector electrodes. Ward further teaches to detect drive feed through via a sensor and nulling the measured components by adjusting the amplitude of the drive signal(s). Ward specifically teaches to use a trace source (column 7, lines 32+ to provide signal(s) used to null errors in the drive circuit. This appears to be what applicant does in figure 5 of the drawings, where the signal from dummy electrode element 80 is fed back to subtractor 99. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to provide monitor electrodes to the device of Kobayashi, as combined with Itoh, to better control the driving means of Kobayashi, as taught in Ward. In view of the fact that the monitor electrodes are recognized by Ward as having drive feed through problems along with the detector electrodes, it would have been further obvious in view of Itoh to shield the monitor electrodes from the drive electrodes as well. It would have been

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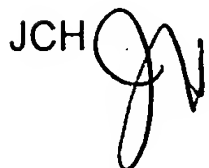
further obvious in view of Ward to use means for sensing the drive feed through to obtain a signal to null the feed through in the drive electronics. The "predetermined" distances and spacings recited in new claim 15 would be inherently obvious in the placement of a shield between two elements to shield them from one another, as set forth in the previous rejection, above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Hanley whose telephone number is 571-272-2195. The examiner can normally be reached on M-F 9AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCH



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